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CONSERVATION OF WALL PLASTERS AND TEXTS
WEST WALL, RED MONASTERY
OCTOBER – NOVEMBER 2019



The area of the west wall after the 2019 conservation project. Photo credit N. Warner

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PROJECT AIMS

The conservation project in the autumn season of 2019 aimed to complete work on the wall plaster and texts of the nave of the Red Monastery. The majority of the plaster, paintings and texts in this open area had previously been conserved over seven seasons between 2015-18 by Italian conservators from De Cesaris Conservazione e Restauro.

The remaining unconserved area was all located on the west wall of the nave, and consisted of a final strip of plaster measuring approx. 45 cms running the height of the wall between the new chapel at the south west (sw) corner of the wall and the plaster conserved in the previous campaigns, and a larger area of plaster, approximately five metres wide in the sw corner of the wall above the chapel, this area included five clear graffiti texts as well as some splash marks, and fragments of letters.



Above and next page, the areas at the start of the conservation project



DESCRIPTION AND MATERIALS

The plaster in the area conserved in this final season is, as elsewhere in the nave, a lime plaster with sand, brick and straw aggregates.

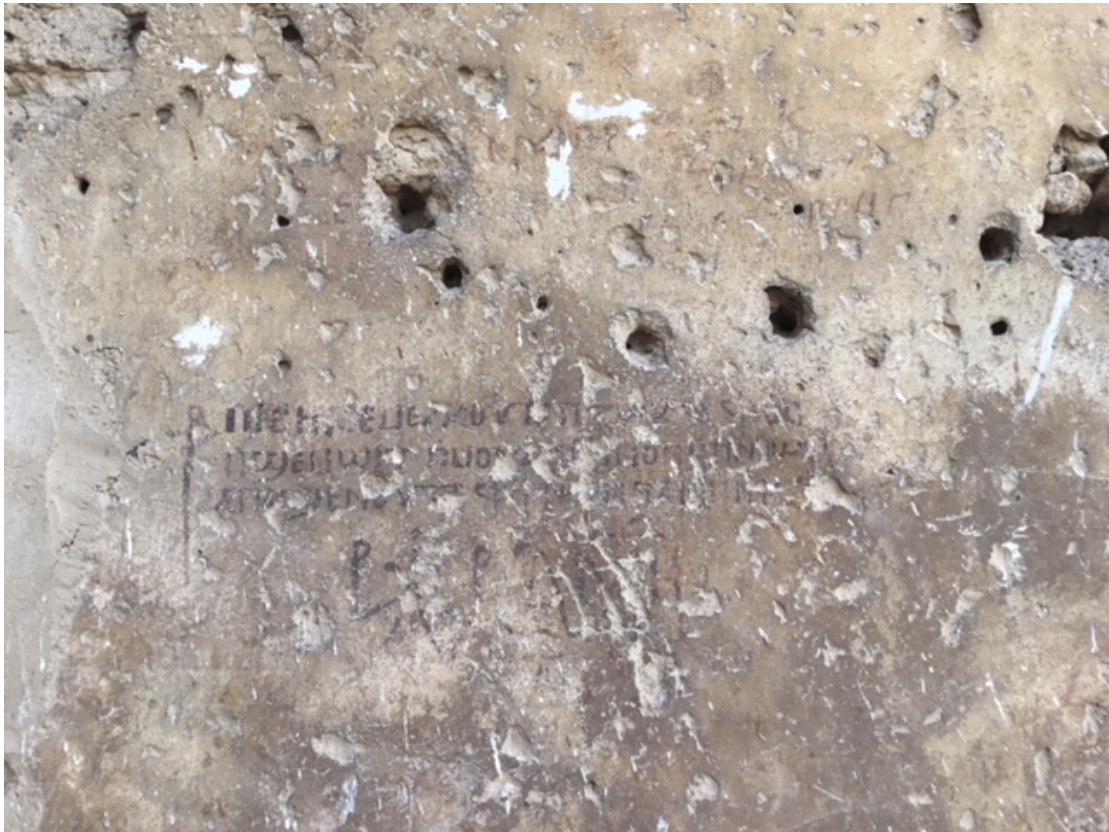
The base layer is pinkish buff in colour, with a visible brick aggregate, with both red and black particles. The upper plaster, which is finished to a fine smooth texture is a white plaster with straw inclusions. It measures approximately 1.5 cms in depth, but the number of layers varies from area to area on the wall – in some, it is a single layer and in others there are two. The substrate of the plasters is the fired brick which makes up the structure of the building.

The five areas of text, found on the plaster above the modern chapel, are executed in red, likely a red oxide, and black.¹ The texts² are, respectively, starting from the top left side of the wall: a rather faint three line red text; below this a finely written darker

¹ Pigment analysis was not carried out as a part of this conservation treatment

² Currently being studied/deciphered by a Coptologist

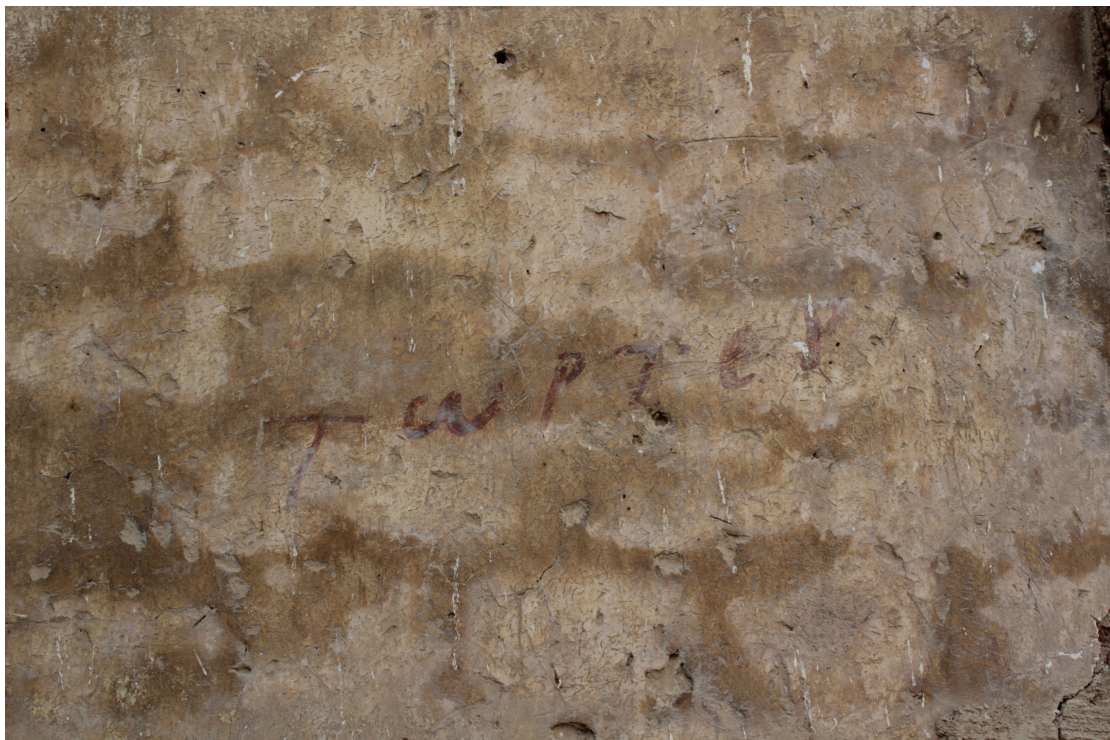
red text which covers four lines; to the right of these is a large and rather smudged red text, with a separate, smaller black text within it. During the conservation process, it was revealed that the black text within the smudged text is applied on a very thin white plaster, which is above the red text. The blurred appearance of the red text is partly due to this covering skim of plaster but it is possible that it may also have been deliberately smeared in a cleaning attempt or in preparation for the application of the plaster on which the black text is placed. To the right of these texts is a large red text, which is quite clear, appearing to read 'TWPTeP'.



The upper red (barely visible) text, and lower dark red four line text, before conservation



The blurred red text with the internal, later, black text, before conservation



The single line red text, before conservation

PREVIOUS INTERVENTIONS

There had been no previous conservation work on these areas, but various structural interventions had been undertaken. Notably, to pin and stabilise a large area of the

wall, which included the insertion of three large wooden beams,³ this system replaced an earlier pinning system which had involved the insertion of wooden ties in the wall.



Detail of one of the wooden beams and associated materials used in the stabilisation of the section of wall

There was also evidence of some previous repairs/interventions independent of the stabilisation of the wall – a large cement repair ran down the wall at the junction between the south and west walls, and some localised areas of gypsum plaster repair around exposed brick were also found. A modern red paint covered the vertical plaster strip from the height of the chapel down to the ground. At the lower levels of this strip, the surface was also liberally splattered with cement – likely associated with the building of the chapel.

³ Part of the structural work at the Red Monastery which has been a wider part of the overall conservation project for the building in the Red Monastery Conservation Project.



Cement repair to the left of the dark red text, at the junction with the south wall

CONDITION BEFORE CONSERVATION

The losses of large areas of plaster, as well numerous smaller holes had left the remaining plaster in the area unsupported and detaching from the walls, this was particularly the case around the structurally repaired section of wall. Here areas of plaster were not only detaching and hanging away from the wall, but there was also a lot of detachment in the section of plaster to the left of the repair – it is likely that this occurred during the movement of the wall which caused the structural instability – and may have been further exacerbated by the work necessary to achieve the two structural interventions.



Detail of detaching plaster

The plaster surface was covered in encrustations of dirt, sand, sulfation, as well as calcite deposits from the lime within the plaster and what appeared to be historic microbiological growth. There were also sooty deposits, likely dating from the time that housing existed in the nave. This soot was particularly heavy on the upper section of plaster at the sw corner.



Detail, build up of surface deposits

The surface was also pitted, due to erosion from windblown sand, numerous small losses (in addition to the large areas of plaster loss, associated to the movement of the substrate) from scratches, blows and other incidental damage as well as holes from the activity of masonry bees. Bird lime covered the surfaces.



Small holes and losses and masonry bee damage



Bird lime and sooty deposits

As noted above, the untreated vertical strip next to the new chapel had a modern red paint, as well as splashes and lumps of cement.

CONSERVATION TREATMENT

- ***Removal of Inappropriate Old Repair Material and Splattered Cement***

The cement and gypsum repairs were removed mechanically, as possible, gently trimming them away from the original plaster using a scalpel and removing the bulk with a chisel once a channel had been opened up, or by reducing the lumps of splattered cement by slowly removing the upper material using a chisel or scalpel. Cement was not fully removed where it abutted broken areas of original plaster, or as it directly bonded to original surfaces as its removal was likely to risk damaging the original.

- ***Stabilisation and Repairs***

Loose and detaching plaster was secured by grouting behind the detached areas with a lime based grout developed for the treatment of wall plasters. This was introduced by syringe and allowed the reattachment of the vulnerable areas. Edge repairs using a lime mortar were used to support vulnerable edges.

Larger repairs were made to losses, to secure the plaster, removed traps for dust and dirt as well as nesting areas and perches for birds. The repairs also serve a visual purpose in allowing undisruptive reading of the walls uninterrupted by holes, losses and damage. These repairs were built up in two layers, with a coarser deep mortar followed by a finer finish mortar.



Grouting and securing edge repairs to detaching plaster, left, and right, deep repair mortar building up the large repair to stabilise the plaster around the structurally secured area

- ***Consolidation of Texts***

The texts were consolidated with 5% Paraloid B72 in acetone, this was carried out before any cleaning was undertaken to ensure that no paint was risked in the cleaning process.

- ***Cleaning***

Cleaning was undertaken to clear the surfaces of a build-up of dirt deposits and encrustations, these were largely made up of dust, soot, calcite crusts and bird lime, as well as modern red paint and splattered cement on the area next to the new chapel.

The build up of surface dirt, dust, encrustations and deposits was reduced from the surface first by dry cleaning with brushes, scalpels and Wishab (self abraiding rubber) sponges.

This was followed by a treatment with acetone applied through tissue, to degrease the surface. A 5% ammonium carbonate was then applied in gel form, the contact time with the surface varying depending on the dirt levels of each area, it was then removed with brushes and water. If necessary, and after thorough drying of the

surface, in areas with a heavier deposit build up, a 10% mix was used in a second application, applied and removed in the same way. Following the gel cleaning and removal, the areas were cleaned with a final pure water clean after the full drying of the area.

Texts were cleaned using similar methods to the surrounding plaster but with the materials rolled across them on cotton swabs to avoid disturbing the paint layer, gel residue and solubilized dirt deposits were then removed from the surface by again rolling clean water swabs across the surfaces.



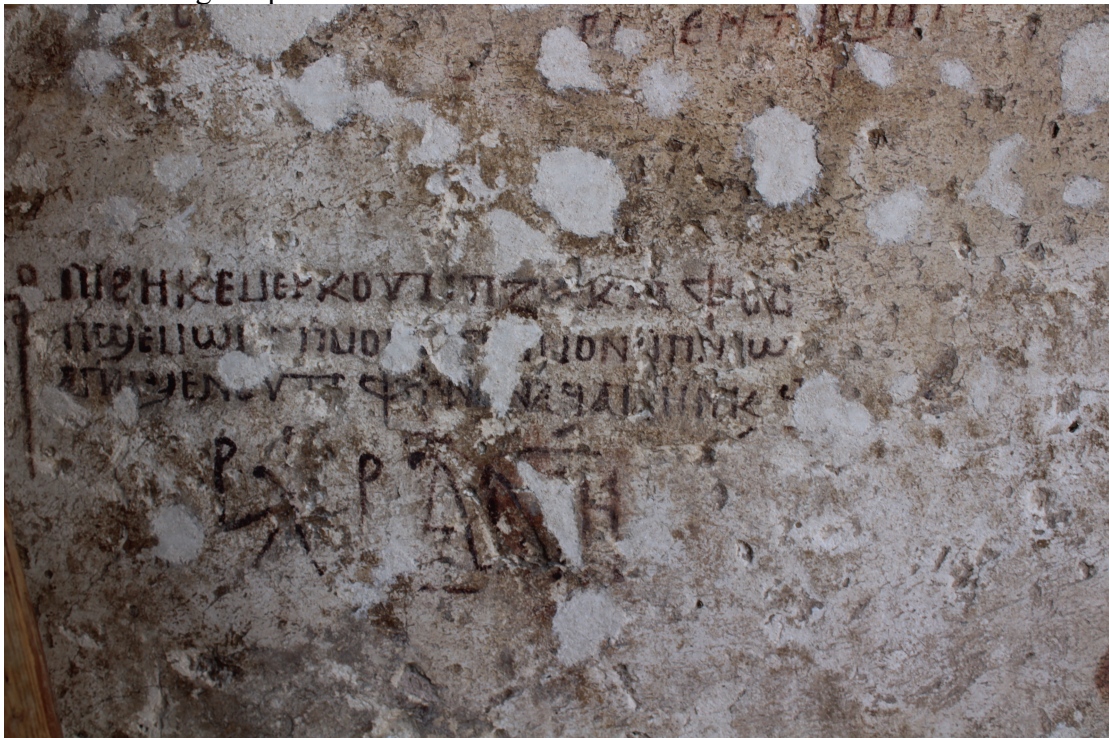
The plaster during the cleaning process



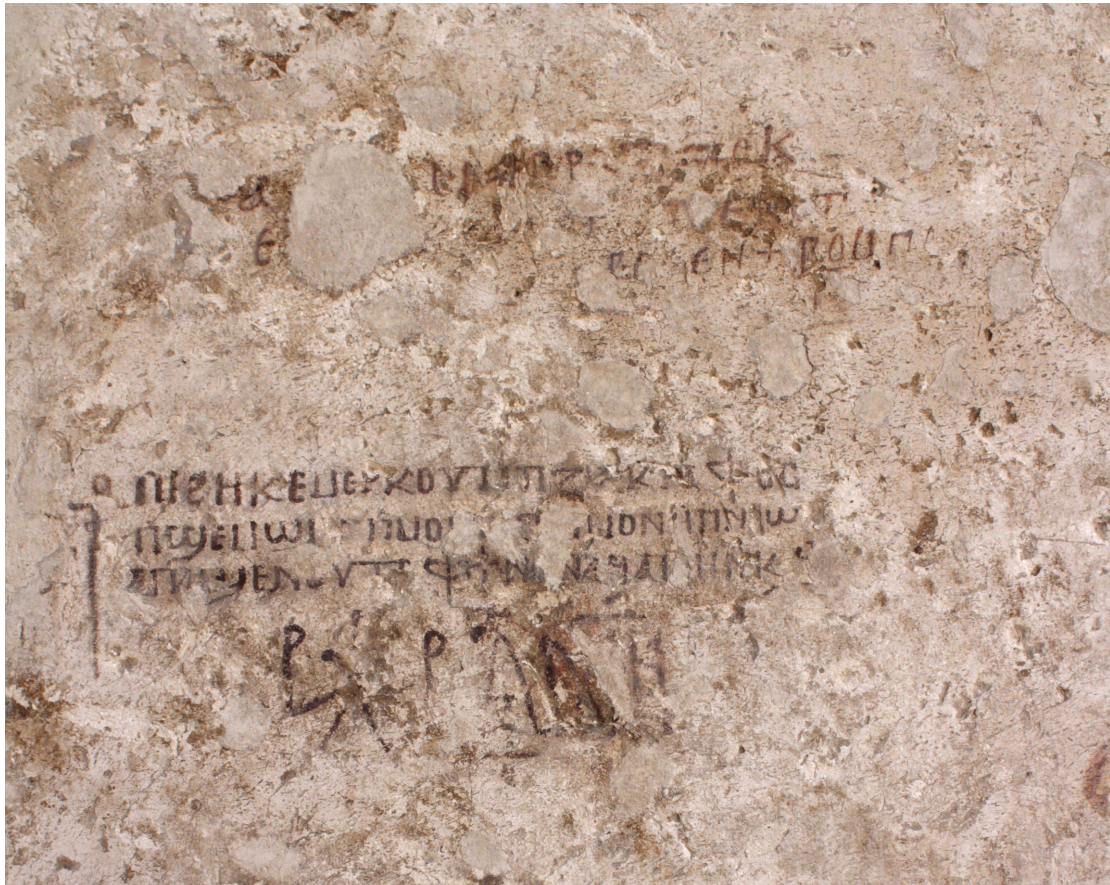
Reducing the sooty deposits

- ***Reintegration***

After the stabilisation, cleaning and repairs, the final presentation was undertaken. The new repairs were toned as necessary, using earth pigments in water, to achieve a final appearance that was visually sympathetic to, and blended with, the surrounding areas of the original plaster.



Above, conservation of the texts, with final repairs but before reintegration of the new mortar



Conservation of the texts after reintegration of the repairs

- **Documentation**

A full photographic record was made of the conservation process – with the areas photographed before, during and after the conservation treatment.

The texts were also examined using D-stretch,⁴ to pinpoint and clarify areas of pigment and to trace outlines more accurately. Areas were recorded using D-stretch both before starting the conservation process and during the conservation work as overlying dirt layers were reduced.

All detachments which were secured by the addition of grouting material were mapped on to a photographic record of the area, to have a record of conservation interventions which are beneath the surface of the plaster and therefore not visible on surface examination.

CONSERVATION MATERIALS

The materials used for the conservation work largely followed those used in the previous Italian campaigns, to ensure a continuity of appearance and the compatibility of materials between the adjoining areas:

⁴ Decorrelation stretch - digital image enhancement software which works by enhancing the colour separation of an image.

Detaching wall plasters were secured using a lime-based grout developed for the consolidation of wall plaster (PLM-AL). Further stabilisation was carried out using edge repairs and as well as fills using lime mortars. The lime mortars used varied in the aggregate component (brick dust, sands of different grades and stone powders) and ratio to the lime putty depending on the area. The mortar selection followed the previous Italian methodology to ensure a coherent approach and finish to all of the walls.

The ammonium carbonate gel used to remove and reduce the dirt deposits and encrustations was used at a lower percentage than in the previous campaigns – between 5 and 10 % with contact time with the plaster depending on the dirt levels, varying between 10-30 minutes. This had the same cleaning effect as the higher concentrations used in the previous work but with a less aggressive action

CONCLUSION/RECOMMENDATIONS

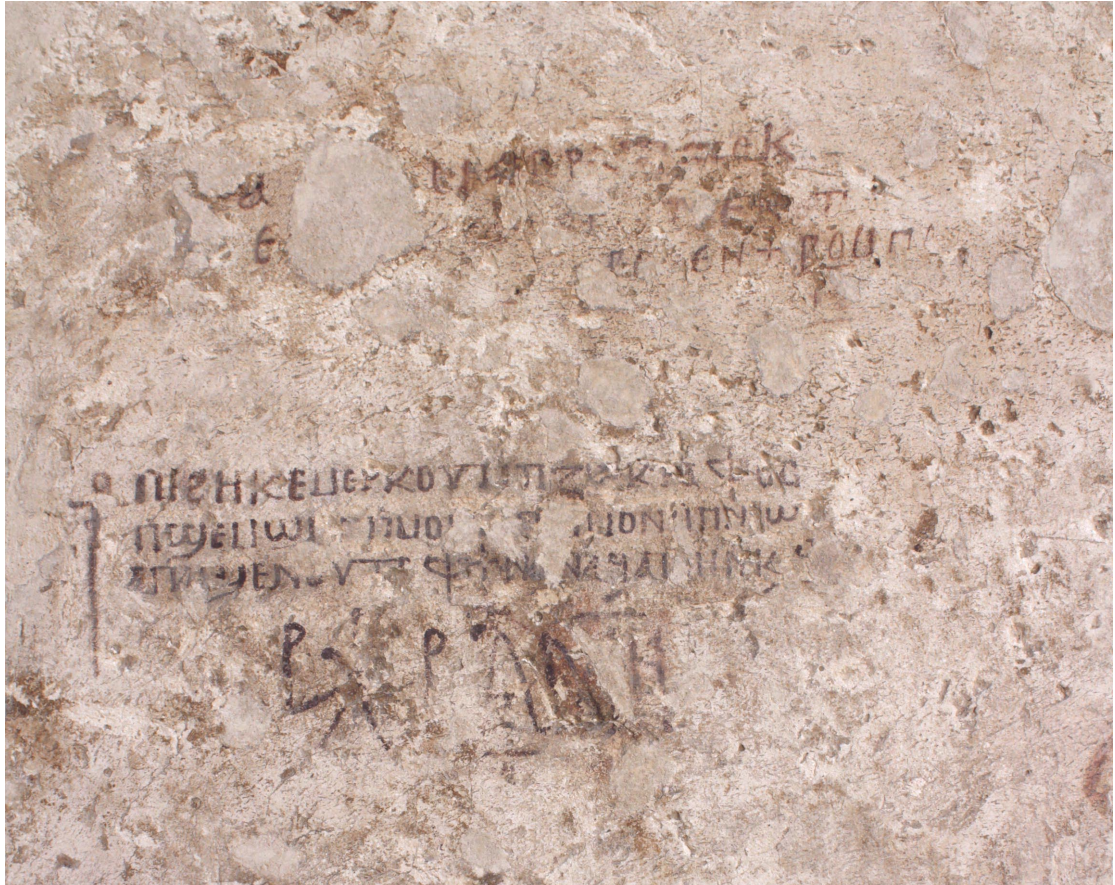
These final areas of plaster are now secured, the texts consolidated and much more visible following the removal of the covering and surrounding dirt layers. Repairs not only secure the original plaster but make these areas read coherently with the rest of the walls of the nave. While the filling of the various holes within the plaster has reduced the nesting and perching opportunities for birds within the plaster, the area the top of the wall still affords perching points.⁵

Although the pigments used for the texts in this area are highly likely to be natural or earth pigments (red oxide and most likely carbon black) and therefore not UV sensitive,⁶ high Lux levels are also identified as one of the agents of deterioration to historic materials – and although this corner very rarely receives direct sunlight it is, like the rest of the nave, fully exposed to natural light at all times due to the lack of any roof, or protective shelter.

The lack of any kind of protection or shelter for the walls also leaves them open to the elements including the ongoing abrasion from windblown sand from which the surface has already suffered. The installation of a shelter or roof to protect the plaster and wall paintings from the elements is a imperative for the continuing protection and preservation of the paintings and plasters in the Red Monastery nave.

⁵ It was noted that there are already splashes of bird lime on the adjoining area of plaster conserved in the Italian campaigns, so some birds are still roosting at the tops of the walls.

⁶ This lack of protection from UV and Lux is very serious in the case of the uncovered paintings in the rest of the nave where, it is understood, light sensitive pigments have been identified in some of the paintings.





Above, the three text areas after conservation





Above, and previous page, the two plaster areas after conservation

APPENDICES

Mapping of Grouted Areas





D-Stretch Images of the Texts Before and During the Conservation Treatment

